spraying with a formulation containing arsenic. It would thus appear that the effect is not confined to sprays containing mercury. The mechanism of this effect, together with other aspects of the phenomenon, are being studied.

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Labelling of Cells in Thoracic Duct Lymph of the Guinea Pig after Tritiated Thymidine

SINCE tritium gives precise localization in radioautographs¹, and in view of the fact that thymidine is generally believed to be specifically incorporated into deoxyribonucleic acid², tritiated thymidine has been employed in recent years to an increasing extent for the study of cellular proliferation.

The studies now reported have been conducted on a series of 22 male guinea pigs, of mixed strain, weighing approximately 400 gm. each. Tritiated thymidine with specific activity of either 0.36 or 1.9 curies/mM. was given in doses of 1 μ c. per gm. body-weight, and thoracic duct lymph and blood were studied in smear preparations at various periods afterwards. Suspensions and sections were also prepared of thymus, cervical and mesenteric lymph nodes, spleen and bone marrow. Coated radioautographs were prepared by the method of Belanger and Leblond³.

Labelled lymphocytes began to appear in lymph during the first hour after the administration of tritiated thymidine, and were thereafter present for several days. To begin with, labelled large lymphocytes are mainly in evidence, though some medium lymphocytes are also seen. Gradually, the size distribution of the labelled cells changes, so that in one experiment the size distribution during the first hour was 47 : 7 : 0 (that is, 47 large, 7 medium and 0 small lymphocytes), in the second hour 48 : 20 : 0, in the third hour 57 : 35 : 4 and in the fourth 75 : 64 : 20. Labelled small lymphocytes began to appear during the third hour and then gradually increased. In the lymph of another animal, obtained at 14 hr. after thymidine, the size distribution among the labelled cells was 47 : 75 : 54, and in lymph collected after 25 hr. it was 33 : 65 : 94. After a single injection of thymidine, a steady stream of labelled lymphocytes, ranging from 2.0 to 7.0 per cent of the total thoracic duct cells, enters the blood over several days. These findings, which differ from those of Gowans⁴ in the rat, suggest the continuous liberation of cells from a precursor pool. Labelled small lymphocytes were also found in the blood by the seventh hour, and in view of the work of Bond *et al.*⁵, are presumably cells which have entered the blood after labelling in the lymphoid tissues.

Examination of the lymphoid tissues shows active synthesis of deoxyribonucleic acid from the outset, especially in the germinal centres. Though accurate quantitation is not yet possible, it seems clear that there is extensive new formation of lymphocytes;

and that a large number of the small lymphocytes in thoracic duct lymph must be newly formed cells. The results do not support the concept either of massive re-utilization⁶ or large-scale recirculation⁷.

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Some Structural Characteristics of Myelinated Nerve Fibres

IN a previous communication¹ observations were made concerning some errors attendant on methods which have been used in the quantitative examination of myelinated nerve fibres.

A technique demonstrated² to the Anatomical Society of Great Britain and Ireland on February 28 has been used to investigate the size relation of the axon and its myelin sheath³. During examination of the sural nerve and the nerve to the medial head of the gastrocnemius muscle of the rabbit some points of general interest not previously published have emerged.

5- μ transverse sections of fresh nerve were examined using a polarizing microscope, and measurements of axonal and external diameter made.

Fig. 1. Composite graph of twice myelin sheath thickness against axon diameter for a muscle nerve and a cutaneous nerve of the rabbit. A line derived from Sanders (ref. 4) for fixed and stained fibres of the mixed peroneal nerve of the rabbit is included for comparison.